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<b>(21) International Application Number:</b> PCT/CA98/00423 <b>(22) International Filing Date:</b> 6 May 1998 (06.05.98)  <b>(30) Priority Data:</b> 60/045,851                7 May 1997 (07.05.97)                US 60/051,566               2 July 1997 (02.07.97)                US 60/061,566               10 October 1997 (10.10.97)            US  <b>(71) Applicant:</b> LITENS AUTOMOTIVE PARTNERSHIP [CA/CA]; 730 Rowntree Dairy Road, Woodbridge, Ontario L4L 5T9 (CA).  <b>(72) Inventors:</b> MEVISSEN, Pierre, A.; 38 Crosby Avenue, Rich- mond Hill, Ontario L4C 2R2 (CA). THOMEY, Henry, W.; P.O. Box 241, 1230 First Line, Guilford, Ontario L0L 1R0 (CA). LIPOWSKI, K., Mats; 74 Stavely Crescent, Toronto, Ontario M9W 2C8 (CA). BYTZEK, Klaus, K.; R.R. #3, Schomberg, Ontario (CA). LAM, Kin; 47 Lloydminster Cr., North York, Ontario M2M 2S2 (CA).  <b>(74) Agent:</b> IMAI, Jeffrey, T.; Magna International Inc., 337 Magna Drive, Aurora, Ontario L4G 7K1 (CA).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>

**(54) Title:** SERPENTINE DRIVE SYSTEM WITH IMPROVED OVER-RUNNING ALTERNATOR DECOUPLER

**(57) Abstract**

A serpentine belt drive system (18) for an automotive vehicle comprising a drive assembly including an internal combustion engine (10) having an output shaft (14) with a driving pulley (16) thereon rotatable about a driving pulley axis. A sequence of driven assemblies each has a driven pulley rotatable about an axis parallel with the driving pulley axis and a serpentine belt (20) mounted in cooperating relation with the driving pulley (16) and with the driven pulleys in a sequence which corresponds with the sequence of the driven assemblies when related to the direction of movement of the belt to cause said driven pulleys to rotate in response to the rotation of the driving pulley. The sequence of driven assemblies includes

an alternator assembly (26) including an alternator shaft (36) mounted for rotation about a shaft axis. A hub structure (52) is fixedly carried by the alternator shaft (36) for rotation therewith about the shaft axis. A spring and one-way clutch mechanism couples the alternator pulley (26) with the hub structure (52). The spring and one-way clutch mechanism (72) comprises a resilient spring member (74) separately formed from and connected in series with a one-way clutch member (76). The resilient spring member (74) is constructed and arranged to transmit the driven rotational movements of the alternator pulley (26) by the serpentine belt (20) to the hub structure (52) such that the alternator shaft (36) is rotated in the same direction as the alternator pulley (26) while being capable of instantaneous relative resilient movements in opposite directions with respect to the alternator pulley during the driven rotational movement thereof. The one-way clutch member (76) is constructed and arranged to allow the hub structure and hence the alternator shaft to rotate at a speed in excess of the rotational speed of the alternator pulley when the speed of the engine output shaft is decelerated to an extent sufficient to establish the torque between the alternator pulley (26) and the hub structure (52) at the predetermined negative level.

